WHAT IS CLAIMED IS:

- 1. A method for analyzing data, comprising performing an unsupervised analysis of data according to a reordered distance matrix.
- 2. The method of claim 1, wherein said distance matrix is reordered using a weighting function.
- 3. The method of claims 1 or 2, suitable for automatically and semiautomatically analyzing data.
- 4. The method of any of claims 1-3, wherein the data comprises a plurality of objects characterized by continuous variables.
 - 5. The method of any of claims 1-4, further comprising: visualization of the data according to said analysis.
- 6. The method of claim 5, further comprising:

 detecting at least one characteristic of the data according to said visualization.
 - 7. The method of any of claims 1-6, further comprising:

detecting at least one characteristic of the data according to said analysis.

- 8. The method of claims 6 or 7, wherein the data is analyzed without reference to a predetermined order and/or wherein the data lacks preordering.
 - 9. The method of any of claims 1-8, comprising the SPIN method.
- 10. The method of claim 9, wherein the SPIN method comprises the Side-to-Side (STS) method, featuring a strictly increasing or decreasing vector for reordering said distance matrix.
- 11. The method of claim 10, wherein said STS method comprises: Input: D_{nxn} and a strictly increasing vector X
- 1. Compute S = DX.
- 2. Sort S in descending order to get S' = P(S), where P is the sorting permutation.
- 3. If P(S) != S, set $D = P D P^T$ and go to stage 1.
- 4. Output *D*.
- 12. The method of claim 11, further comprising performing stages 1-3 more than once.

- 13. The method of claims 11 or 12, further comprising using at least one heuristic to reorder D.
- 14. The method of claim 9, wherein the SPIN method comprises the *Neighborhood* method, featuring a matrix of fixed size.
- 15. The method of claim 14, wherein said Neighborhood method comprises:

Input : D_{nxn} and W_{nxn}

- 1. Compute M = D W
- 2. Set $P = arg \min_{Q \in S_n} tr(QM)$.
- 3. If $\operatorname{tr}(PM) := \operatorname{tr}(M)$, set D = PDPT and go to 1.
- 4. Output D.
- 16. The method of claim 15, further comprising performing stages 1-3 more than once.
- 17. The method of claims 15 or 16, further comprising using at least one heuristic to reorder D.
- 18. The method of claim 14, wherein the *Neighborhood* method features Gaussian smoothing.

- 19. The method of any of claims 15-18, wherein stage 2 is performed by solving the Linear Assignment Problem.
- 20. The method of any of claims 1-19, further comprising: zooming in on a part of the data by separately examining a sub-matrix of the data according to said analysis.
 - 21. The method of claim 20, further comprising:

separately examining a plurality of sub-matrices of the data according to said analysis; and

comparing results of said separate examinations to determine at least one characteristic of the data.

- 22. The method of any of claims 1 to 21, wherein the data comprises gene expression data and/or data from a gene microarray, comprising data from a large number of genes analyzed simultaneously.
- 23. The method of any of claims 1 to 21, wherein the data comprises data from expression of genes in cancerous tissue.
- 24. The method of any of claims 1 to 21, wherein the data comprises data related to a biological process, optionally including a biological cycle.

- 25. The method of any of claims 1 to 21 adapted for machine vision.
- 26. A method for analyzing gene expression data and/or data from a gene microarray, comprising data from a large number of genes analyzed simultaneously, comprising:

filtering the data according to a variance filter to form filtered data; determining a distance matrix for said filtered data; and reordering said distance matrix to analyze said filtered data.

27. The method of claim 26, further comprising:

analyzing said reordered distance matrix to determine at least one characteristic of said filtered data.

- 28. The method of claim 27, wherein said reordering is performed according to an automatic and/or semi-automatic, unsupervised analysis.
- 29. The method of claim 28, wherein said reordering is performed according to SPIN.
- 30. The method of any of claims 27-29, wherein the data is analyzed to determine a noise level in the data.

- 31. The method of claim 30, wherein said noise level is used to alter at least one characteristic of the microarray or of an experimental protocol for data collection.
- 32. The method of any of claims 27-29, wherein the data is analyzed to determine an inherent property of the data other than a property for which the experiment was designed.
- 33. The method of any of claims 26-32, wherein the data comprises cancer-related data.
- 34. The method of any of claims 26-33, adapted for ordering both samples and genes.
- 35. A method for analyzing data related to a biological process, optionally including a biological cycle, comprising the SPIN method.
 - 36. A method for machine vision, comprising the SPIN method.
- 37. The method of claim 36, wherein the SPIN method is performed for analyzing a distance matrix for visual data.
 - 38. The method of claim 37, further comprising:

zooming in on a part of the data by separately examining a sub-matrix of the data according to said analysis.

39. The method of claim 38, further comprising:

separately examining a plurality of sub-matrices of the data according to said analysis; and

comparing results of said separate examinations to determine at least one characteristic of the data.

- 40. A method according to any of claims 1-39, for partitioning the data into a plurality of optionally overlapping subsets.
 - 41. The method of claim 40, further comprising:

using the distance matrices calculated from each subset separately to find novel partitions.

- 42. The method of any of claims 1-41, further comprising implementing the method and presenting the data with an intuitive easy-to-use GUI.
- 43. A method for analyzing data from expression of genes in cancerous tissue, comprising the SPIN method.

44. The method of any of claims 1-43, further comprising optionally constraining said reordering according to a dendrogram from any hierarchical clustering method.